

WHAT IS CLAIMED IS:

1. An apparatus for halftoning a color image comprising:

an address generator that receives a pixel in an image intended for halftoning and generates an address corresponding to a position of the pixel in a mask memory storing mask threshold values for one color channel;

a mask generator that receives a respective stored mask threshold value corresponding to the address from the mask memory and generates a respective mask threshold value for each of a plurality of color channels; and

a comparison unit that sequentially receives the respective mask threshold value generated for each of the plurality of color channels and a pixel value in the image intended for halftoning, compares both values with each other, and outputs a bilevel value according to a predetermined rule.

2. The apparatus of claim 1, wherein the address generator comprises:

a pixel position information storage unit that receives the pixel in the image intended for halftoning and stores the position of the pixel;

a mask memory that stores mask threshold values for each color channel generated according to a predetermined algorithm; and

a mask address generator that sequentially receives information on the pixel position from the pixel position information storage unit and generates

the address corresponding to the position in the mask memory.

3. The apparatus of claim 2, wherein the pixel position information storage unit comprises:

an X-direction counter that counts X- coordinates of pixels; and

a Y-direction counter that counts Y-coordinates of pixels.

4. The apparatus of claim 2, wherein the mask memory stores a Bayer Dither Table.

5. The apparatus of claim 4, wherein the mask memory stores an 8x8 Bayer Dither Table.

6. The apparatus of claim 1, wherein the mask generator comprises:

a mask information input unit that receives the respective stored mask threshold value from the mask memory;

an offset calculator that calculates a predetermined offset; and

a mask calculator that calculates the respective mask threshold value for each of the plurality of channels using information on the predetermined

offset calculated by the offset calculator and the respective stored mask threshold value.

7. The apparatus of claim 6, wherein the offset calculator calculates the predetermined offset by dividing a largest pixel value in the image intended for halftoning by a number of colors used in the halftoning apparatus.

8. The apparatus of claim 6, wherein in order to generate the respective mask threshold value for each of the plurality of channels, the mask calculator receives the respective stored mask threshold value from the mask information input unit, adds the predetermined offset calculated by the offset calculator to the respective stored mask threshold value, and if a resulting value is greater than a largest pixel value, calculates the respective mask threshold value by subtracting the largest pixel value from the resulting value.

9. An apparatus for generating a mask during halftoning comprising:

a mask information input unit that receives mask information for one color channel generated by a predetermined algorithm;

an offset calculator that calculates a predetermined offset; and

a mask calculator that calculates masks for a plurality of channels using information on the predetermined offset calculated by the offset calculator.

10. The apparatus of claim 9, wherein the offset calculator calculates the predetermined offset by dividing a largest pixel value in an image intended for halftoning by a number of colors used for halftoning.

11. The apparatus of claim 9, wherein in order to generate the masks for the plurality of channels, the mask calculator receives a mask threshold value from the mask information input unit, adds the predetermined offset calculated by the offset calculator to the mask threshold value, and if a resulting value is greater than a largest pixel value, calculates a respective mask threshold value by subtracting the largest pixel value from the resulting value.

12. A method for halftoning a color image comprising the steps of:

(a) receiving a pixel in an image intended for halftoning and generating an address corresponding to a position of the pixel in a mask memory storing mask threshold values for one color channel;

(b) receiving a respective stored mask threshold value corresponding to

the address from the mask memory and generating a respective mask threshold value for each of a plurality of color channels; and

(c) sequentially receiving the respective mask threshold value generated for each of the plurality of color channels and a pixel value in the image intended for halftoning, comparing both values with each other, and outputting a bilevel value according to a predetermined rule.

13. The method of claim 12, wherein the step (a) comprises the steps of:

(a1) storing in advance the respective stored mask threshold value for one color channel generated according to a predetermined algorithm;

(a2) receiving the pixel in the image intended for halftoning and storing the position of the pixel; and

(a3) sequentially receiving information on the pixel position stored in the step (a2) and generating the address of the respective stored mask threshold value in the mask memory corresponding to the position.

14. The method of claim 12, wherein the mask memory stores a Bayer Dither Table.

15. The method of claim 14, wherein the mask memory stores an 8x8 Bayer Dither Table.

16. The method of claim 12, wherein the step (b) comprises the steps of:

(b1) receiving the respective stored mask threshold value from the mask memory;

(b2) calculating a predetermined offset; and

(b3) calculating the respective mask threshold value for each of the plurality of channels using information on the predetermined offset calculated in the step (b2) and the respective stored mask threshold value.

17. The method of claim 16, wherein in the step (b2), the predetermined offset is calculated by dividing a largest pixel value in the image intended for halftoning by a number of colors used for the halftoning method.

18. The method of claim 16, wherein in the step (b3), the respective mask threshold value is generated for each of the plurality of channels by receiving the respective stored mask threshold value stored in the mask memory, adding the predetermined offset to the respective stored mask

threshold value, and if a resulting value is greater than a largest pixel value, calculating the respective mask threshold value by subtracting the largest pixel value from the resulting value.

19. A method for generating a mask during halftoning comprising the steps of:

(a) receiving mask information for one color channel generated by a predetermined algorithm;

(b) calculating a predetermined offset; and

(c) calculating masks for a plurality of channels using information on the predetermined offset calculated in the step (b).

20. The method of claim 19, wherein in the step (b), the predetermined offset is calculated by dividing a largest pixel value in an image intended for halftoning by a number of colors used for the halftoning process.

21. The method of claim 19, wherein in the step (c), masks are generated for the plurality of channels by receiving threshold values stored in a mask memory, adding the predetermined offset to each threshold value, and if a resulting value is greater than a largest pixel value, calculating a respective threshold value after subtracting the largest pixel value from the resulting

value.

22. A computer-readable recording medium that records a program for executing a color image halftoning method on a computer, the method comprising the steps of:

(a) receiving a pixel in an image intended for halftoning and generating an address corresponding to a position of the pixel in a mask memory storing mask threshold values for one color channel;

(b) receiving a respective stored mask threshold value corresponding to the address from the mask memory and generating a respective mask threshold value for each of a plurality of color channels; and

(c) sequentially receiving the respective mask threshold value generated for each of the plurality of color channels and a pixel value in the image intended for halftoning, comparing both values with each other, and outputting a bilevel value according to a predetermined rule.

23. A computer-readable recording medium that records a program for executing a mask generation method used during halftoning on a computer, the method comprising the steps of:

(a) receiving mask information for one color channel generated by a predetermined algorithm;

(b) calculating a predetermined offset; and

(c) calculating masks for a plurality of channels using information on the predetermined offset calculated in the step (b).